HAYDEN'S
Arboricultural Consultants

Tree Survey, Arboricultural Impact Assessment
Preliminary Arboricultural Method Statement & Tree Protection Plan
In Accordance with BS 5837:2012

Proj. No **9993**	**37 St Martins Approach, Ruislip, HA4 7QH**		
Client:		GK Architect Ltd	
Date of Report:	20/12/2022	Revision:	Original

Tree Survey, Arboricultural Impact Assessment, Preliminary Arboricultural Method Statement & Tree Protection Plan – In Accordance with BS 5837:2012

Summary

The purpose of this report is to provide a preliminary consideration of the arboricultural implications created by the proposed development. In accordance with the feasibility and planning sections of BS5837:2012 *"Trees in relation to design, demolition and construction – Recommendations"*, trees deemed to be within the influencing distance of the projected construction have been evaluated for quality, longevity and initial maintenance requirements. Where trees do not have to be removed for health and safety reasons, a detailed and objective assessment has been made of the consequences of the intended layout.

In this circumstance it is intended to construct a replacement garden room in the rear garden. As a result, seven individual trees, one area of trees and five hedges were inspected. The arboricultural related implications of the proposal are as follows:

1 It is necessary to fell one category 'C' tree (T004) and a small section of one category area of trees (A001) and hedge (H002) to achieve the proposed layout. Additionally, one hedge (H003) requires minor surgery to permit construction.

2 The alignment of the replacement garden room encroaches within the Root Protection Areas of trees that are to be retained. In view of this, careful consideration must be given to foundation design as discussed at item 4.4.1.

3 The alignment of a footpath encroaches within the Root Protection Areas of trees that are to be retained but given the use of modern "no dig" construction techniques this is not considered to be a substantial issue.

4 This report recommends that specialist advice is obtained by expert practitioners in other disciplines. Such input should always be sought prior to construction to demonstrate that the techniques and methods hereby proposed are achievable. In this particular circumstance it is necessary to contact the following:

- Structural Engineer (foundation design, item 4.4.1)

5 All trees and landscape features that are to remain as part of the development should suffer no structural damage provided that the findings with this report are complied with in full. This includes ensuring that protective fencing and ground protection are installed as detailed at items 4.6 and 5.1 of this report.

6 Post Planning Permission – Subject to achieving Planning Permission, a detailed Arboricultural Method Statement and Tree Protection Plan will be required. This will include the following: fencing type, ground protection measures, "no dig" surfacing, specialised foundation design, service drawings, access facilitation pruning specification, project phasing and an auditable monitoring schedule.

Given the above, there are no overt or overwhelming arboricultural constraints that can be reasonably cited to preclude the proposed construction.

Contact Details

Client – Ms Suman Sandhu			
Address 37 St Martins Approach Ruislip HA4 7QH	**Contact** Suman Sandhu	**E-mail:**	sumansandhu@me.com

Local Planning Authority – London Borough of Hillingdon Council			
Address Civic Centre High Street Uxbridge Middlesex UB8 1UW	**Trees Officer** Trevor Heaps	**Tel:** **E-mail:**	01895 250111 -

Arboricultural Consultant – Hayden's Arboricultural Consultants Limited			
Address Unit 6 Enterprise House Cherry Orchard Lane Salisbury Wiltshire SP2 7LD	**Report Author** Nick Hayden	**Tel:** **E-mail:**	01722 657423 nick@treesurveys.co.uk

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1.0 Introduction

1.1 Terms of Reference

1.1.1 Hayden's Arboricultural Consultants Limited has been commissioned by Ms Suman Sandhu to prepare a Tree Survey, Arboricultural Impact Assessment, Preliminary Arboricultural Method Statement and Preliminary Tree Protection Plan for the existing trees at 37 St Martins Approach, Ruislip, HA4 7QH.

1.1.2 The site survey was carried out on 22/11/2021. The relevant qualitative and quantitative tree data was recorded to assess the condition of the existing trees, their constraints upon the prospective development and the necessary protection and construction specifications required to allow their retention as a sustainable and integral part of the completed development.

1.1.3 Information is given on condition, age, size and indicative positioning of all the trees, both on and affecting the site. This is in accordance with the British Standard 5837:2012 *Trees in relation to design, demolition and construction - Recommendations.*

1.2 Scope of Works

1.2.1 The survey of the trees and any other factors are of a preliminary nature. The trees were inspected on the basis of the Visual Tree Assessment (VTA) method as developed by Mattheck and Breloer (1994). The trees were inspected from ground level with no climbing inspections undertaken. It is not always possible to access every tree and as such some measurements may have to be estimated. Trees with estimated measurements are highlighted in the schedule of trees. No samples have been removed from the site for analysis. The survey does not cover the arrangements that may be required in connection with the removal of existing underground services.

1.2.2 Whilst this is an arboricultural report, comments relating to non arboricultural matters are given, such as built structures and soil data. Any opinion thus expressed should be viewed as provisional and confirmation from an appropriately qualified professional sought. Such points are clearly identified within the body of the report.

1.2.3 An intrinsic part of tree inspection in relation to development is the assessment of risk associated with trees in close proximity to persons and property. Most human activities involve a degree of risk with such risks being commonly accepted, if the associated benefits are perceived to be commensurate. In general, the risk relating to trees tends to increase with the age of the trees concerned, as do the benefits. It will be deemed to be accepted by the client that the formulation of the recommendations for all tree management will be guided by the cost-benefit analysis (in terms of amenity) of the tree work.

1.3 Documentation

1.3.1 The following documentation was provided prior to the commencement of the production of this report;

- Email of instruction received from Daniel Patel on 28th November 2022
- Definition of site boundary – drawing no. GH-(0)-09
- Topographical survey – drawing no. E-(0)-09
- Proposed site layout - drawing no. GH-(0)-09

2.0 The Site

2.1 Overview

2.1.1 The site is 37 St Martins Approach, Ruislip. It is a large, detached dwelling with a generous rear garden. Residential dwellings border its northern, southern and western boundaries and the property is accessed via its eastern aspect. The trees surveyed were found to be of mixed age and condition and to provide a variety of amenity benefits.

2.2 Soils

2.2.1 The soil type commonly associated with this site are slowly permeable and seasonally wet, slightly acid but base-rich loams and clays. They are of moderate fertility and mainly support seasonally wet pastures and woodlands type habitats. This soil type constitutes approximately 19.9% the total English land mass.

2.2.2 The data given was obtained from a desk top study which provides indications of likely soil types. By definition, this information is not comprehensive and therefore any decisions taken with regards the management, usage or construction on site should be based on a detailed soil analysis.

2.2.3 Further to item 2.2.2, this report provides no information on soil shrinkability. It may be necessary for practitioners in other disciplines (e.g. engineers considering foundation design) to obtain this data as required.

2.3 Statutory Tree Protection

2.3.1 Tree Preservation Order(s)

The Local Planning Authority (LPA), London Borough of Hillingdon Council, have deemed it appropriate to provide statutory protection to trees on and/or neighbouring this site through the serving of a Tree Preservation Order (TPO), ref no. TPO 459. The effect of this on anyone wishing to undertake work on preserved trees is to require them to obtain written permission from London Borough of Hillingdon Council prior to actioning any tree work. The purpose of this process is to try to ensure that the works are appropriate, proportionate and in keeping with the long-term aims of the TPO. However, given that trees are living organisms and the locality within which they are set is liable to change, it is often the case that LPA decisions relating to TPO applications require regular review to reflect the current situation rather than the historical perspective of the original date of protection.

There are certain circumstances where written permission from the LPA may not be necessary before undertaking works. These include:

- Making a tree safe if it is an imminent threat to people or property.
- Removing deadwood or a dead tree.

Anyone wishing to undertake work as an exemption to the written permission process **are required** to provide the LPA with 5 days' notice prior to attending to a tree which they deem as being dead or dangerous unless such works are required in an emergency. It is the tree owner's responsibility to provide proof that the tree was indeed dead or dangerous should this exception be challenged; hence, it is advisable always to request an inspection by the LPA prior to carrying out such operations. Furthermore, even in the event of an emergency there is still a duty to notify the LPA that work has been completed including supplying an explanation of the necessity.

Failure to comply with the requirements of TPO legislation can lead to a maximum fine of up to £20,000 per tree in the Magistrates Court. Fines in the Crown Court are unlimited.

This information was sourced using the LPA's Online Mapping System and to our best knowledge was current and accurate at the time the information was accessed. We would advise it prudent that before any tree work commences, this is checked directly with the LPA to confirm that their online mapping system is definitive.

2.3.2 If detailed planning permission is granted and as part of the relevant approval works to trees protected by a TPO are agreed as acceptable by the LPA, no additional written permission to proceed will be required provided that:

(i) the planning permission remains live
(ii) the works are in strict accordance with the specification of the extant planning permission
(iii) the works are being completed solely to implement the detailed planning permission.

3.0 Tree Survey

3.1 As part of this survey a total of seven individual trees, one area of trees and five hedges have been identified. These have been numbered T001 – T005, T008 and T011, A001 and H001 – H005 respectively. The numbering has been retained to ensure continuity of record keeping with previous surveys undertaken at this site.

3.2 A topographical survey was provided which showed the position of the trees on site. However, it should be noted that topographical surveys are not always comprehensive and sometimes it is considered appropriate to record details of trees and landscape features omitted from or beyond the scope of the plan. If this circumstance occurs, the location of the individual tree or landscape feature is estimated. The position of each tree is shown on the attached drawing no. 9993-D-AIA.

3.3 In order to provide a systematic, consistent and transparent evaluation of the trees included within this survey, they have been assessed and categorised in accordance with the method detailed in item 4.3 of *BS 5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations"*. For further information, please see the attached Explanatory Notes.

3.4 The detailed assessment of each tree and its work requirements with priorities are listed in the attached Schedule of Trees.

3.5 In accordance with item 4.2.4 (c) of BS 5837:2012, the items inspected and detailed within this report have been selected for inclusion due to the likely influence of any proposed development on the trees, rather than strictly adhering to the curtilage of the site. However, it must be understood that there may be trees beyond the site and not included in this survey which may exert an influence on the development. Where works for cultural, health and safety, quality of life, or development purposes have been recommended on trees outside the ownership of the site, these can only progress with the agreement of the owner, except where it involves portions of the trees overhanging the boundary.

4.0 Arboricultural Impact Assessment

4.1 The Proposal

4.1.1 The proposal is to construct a replacement garden room in the rear garden within the site's curtilage.

4.2 Access

4.2.1 Site access is encumbered by the Root Protection Areas (RPA) of the following retained trees – T008, T011, H004 and H005. In this case the RPA is safeguarded by existing hard surfaces, which it is considered will provide adequate ground protection for the level of development proposed. From a purely arboricultural perspective, it will not be necessary to install a proprietary temporary load bearing road to protect tree roots.

4.3 Demolition

4.3.1 Demolition of the existing garden room and associated decking affects the RPA of T003. To prevent damage to the roots of this specimen, demolition and removal of the existing structure must be completed by hand.

4.4 Construction

4.4.1 Construction of the replacement garden room encroaches within the RPA of T003. As such, it will be necessary to for a Structural Engineer, in conjunction with an Arboriculturalist, to design specialised foundations (e.g. piled, cantilevered or pad and beam) where the footprint of the structure coincides with the RPA. A diagrammatic representation of the affected area is shown on drawing no. 9993-D-AIA. Whatever engineering solution is proposed, it must allow for raised floor levels to incorporate a ventilated air space beneath the underside of the slab and if supported on piles / pads, allow for the position of the piles / pads to be adjusted if an important root is identified during the excavation phase. It is also recommended that a specialist irrigation system is employed (i.e. roof run-off re-directed under the slab).

4.4.2 Installation of a new footpath to access the replacement garden room encroaches within the RPA of T003, A001 and H003. The surface should be attended to using "no dig" construction methods and to protect the RPAs of the affected trees, this area should be constructed as a final phase of development with the RPA initially protected by fencing and ground protection.

4.4.3 Excavation and soil re-modeling is not shown to encroach within the RPA of any retained trees. No adverse arboricultural implications are therefore expected.

4.5 Implications of Sloping Ground

4.5.1 The arboricultural implications of the proposed structures assume that because there are no significant existing slopes on site, level changes will not occur within the RPA of trees that are shown to be retained.

4.6 Requirement for Tree Barrier Fencing

4.6.1 Prior to the commencement of construction and after the completion of the necessary tree work and demolition, protective fencing and ground protection will be installed on site. This must be fit for purpose, in full accordance with the requirements of BS 5837:2012 and positioned as shown on the attached drawing no. 9993-D-AIA. Full details of fencing and ground protection will be supplied by Hayden's Arboricultural Consultants in the detailed Arboricultural Method Statement & Tree Protection Plan.

4.7 Compound

4.7.1 The site provides adequate internal space to locate a construction compound outside the RPA of any trees and landscape features that are to be retained.

4.8 Phasing

4.8.1 The proposal involves the integration of several complex aspects that affect tree protection (e.g. – but not exclusively – movement of materials, installation of specialised foundations and the installation of services). For this reason, the project must be carefully phased to ensure the highest level of protection for retained trees. As part of the detailed Arboricultural Method Statement & Tree Protection Plan, Hayden's Arboricultural Consultants will produce an in-depth phasing recommendation to cover the major operations on site as they affect retained trees.

4.9 Monitoring

4.9.1 In accordance with item 6.3 of BS 5837:2012, the site and associated development should be monitored regularly by a competent Arboriculturalist to ensure that the arboricultural aspects of the planning permission are complied with. As part of the detailed Arboricultural Method Statement & Tree Protection Plan, Hayden's Arboricultural Consultants will produce an extensive auditable monitoring schedule to assess the progress of key site events/activities.

4.10 Tree Surgery to Facilitate Proposed Development

4.10.1 To enable the proposed development it will be necessary to undertake the following tree surgery works to the retained hedge:

Feature No	Description of Works Required	BS Category*
H003	Tip back on northern aspect as shown on drawing no. 9993-D-AIA to permit construction of the replacement garden room.	C

4.11 **Landscape Implications**

4.11.1 The items listed in the table below require felling to permit the proposed development to proceed:

Feature No	Reason for Removal	BS Category*	Visual Amenity Assessment*
A001 (section)	To facilitate construction of the replacement garden room.	C	Low
H002 (section)	To facilitate construction of the replacement garden room.	C	Low
T004	To facilitate construction of the replacement garden room.	C	Moderate

* Please see definitions in the Explanatory Notes attached to this report.

4.12 **Post Development Implications**

4.12.1 Given the proposed garden room is located on a similar footprint to the one being replaced and that this juxtaposition has been present for many years, no adverse arboricultural implications are considered reasonably foreseeable for the trees that remain provided that the recommendations of this report are complied with in full.

5.0 Design Advice, Preliminary Arboricultural Method Statement & Tree Protection Plan

5.1 **Securing of Tree Structure and Root Protection Areas (RPA)**

5.1.1 The trees to be retained will be protected using stout barrier fencing and ground protection installed in the positions indicated on the attached Preliminary Arboricultural Impact Assessment & Tree Protection drawing no. 9993-D-AIA. This fencing and ground protection will be in accordance with the requirements of BS 5837:2012.

5.1.2 All fencing provided for the safeguarding of trees will be erected prior to any demolition or development commencing on the site, therefore ensuring the maximum protection. This fencing, which must have all weather notices attached stating “Construction Exclusion Zone – No Access” will be regarded as sacrosanct and once erected will not be removed, or altered, without the prior consent of the LPA.

5.1.3 Where footpaths, access drives or parking bays are constructed within the RPA of retained trees, careful attention will be paid to the type of surface treatment used in these areas, details of which are given in item 5.8, below. If possible, these should be installed as a final phase of the project, thereby protecting the RPA throughout the major construction phase of the proposed development.

5.1.4 Where fencing is impractical, consideration must be given to other forms of effective above ground tree structure protection. An example of this would be a combination of Barksavers to secure the stems and a temporary load bearing surface to shield the ground.

5.2 Location of Site Office, Compound and Parking

5.2.1 The position of the office, compound and parking will be agreed in writing with the LPA prior to commencement of any permitted development works. Any proposed re-location of these items through the various phases of development will be agreed prior to re-siting with the LPA.

5.3 On Site Storage of Spoil and Building Materials

5.3.1 Prior to and during all construction works on site, no spoil or construction materials will be stored within the RPA of any tree on, or adjacent to the site, even if the proposed development is to be within the RPA. This is to reduce to a minimum the compaction of the roots of the trees. Details of the RPA for each tree where no spoil or building materials will be stored are indicated on the attached Preliminary Arboricultural Impact Assessment & Tree Protection drawing no. 9993-D-AIA.

5.3.2 Any facilities for the storage of oils, fuels or chemicals shall be sited on impervious bases and surrounded by impervious bund walls. The volume of the bund compound shall be at least equivalent to the capacity of the tank plus 10%. If there is a multiple tankage, the compound shall be at least equivalent to the capacity of the largest tank, or the combined capacity of interconnected tanks, plus 10%. All filling points, vents, gauges and sight glasses shall be located within the bund. The drainage system of the bund shall be sealed with no discharge to any watercourse, land or underground strata. Associated pipe-work shall be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets shall be detailed to discharge downwards into the bund.

5.3.3 All material storage facilities and work areas must consider the effects of sloping ground on the movement of potentially harmful liquid spillages towards or into protected areas.

5.4 Programme of Works

5.4.1 All tree surgery works, once approved by the LPA, will be carried out prior to any other site works. Once completed, the proposed protective fencing and ground protection will be installed along the lines indicated above. All of this will be carried out prior to commencement of any development works on the site. Outline details of the proposed programme are given in the Design and Construction and Tree Care flow chart attached (Appendix F-1).

5.5 Tree Surgery

5.5.1 All tree work will be agreed with the LPA and will be carried out in line with BS 3998:2010 (Recommendations for Tree Works). An appropriately qualified insured arboricultural contractor will carry out the work. Any alterations to the proposed schedule of works will be agreed with the LPA prior to commencement of works.

5.6 Levels

5.6.1 Other than for any specific exception which may be referred to at item 4.0, no alterations to soil levels within the RPA of retained trees are envisaged. However, if it is necessary for these to occur, appropriate measures must be taken to prevent or minimise any detrimental effects on the affected root systems as detailed in 5.6.2 and 5.6.3 below.

5.6.2 If it is necessary to excavate so close to trees that roots greater than 50mm diameter are likely to be encountered, particular care will be taken to avoid damage. Excavation in these areas will be undertaken by hand or using an air spade, avoiding any damage to the bark. The roots will be surrounded with sharp sand prior to the replacing of any soil or other material in the vicinity.

5.6.3 If it is necessary to raise levels, it is essential that adequate supplies of water and oxygen pass through the soil to the trees' roots. Therefore, where necessary, a granular material will be used which will not inhibit gaseous diffusion. Possible options are no-fines gravel, cobbles or granite. All hard surfaces will be of suitable specification to allow such gaseous diffusion, e.g. brick pavers.

5.7 Services

5.7.1 At the time of writing this report, no details on proposed services were available. However, the following principles should be adhered to when planning for their installation.

5.7.2 It is proposed that all underground service runs will be placed outside the RPA of the trees on or adjacent to the site. Where it is not possible to do this, the proposed length infringing the RPA will be hand dug 'broken trenches' (NJUG 4 paragraph 4) to ensure the maximum protection of the trees' roots. The trenches may also be excavated using an air spade, or trenchless technology can be employed if this methodology is considered appropriate by the relevant service company (thus allowing services to pass below and through the roots without the need for traditional excavation). If it is necessary to cut any small roots as part of any of these processes, they should be severed in such a way as to ensure that the final wound is as small as possible and free from ragged, torn ends.

5.7.3 All service runs/trenches where they encroach within the RPA of retained trees will be agreed with the Local Planning Authority prior to commencement of works.

5.8 Hard Surface Types & Construction within the Root Protection Area

5.8.1 Where it is necessary to construct footpaths, driveways, non-adoptable roads, and other hard surfaces within the RPA as calculated in accordance with BS 5837:2012 (item 4.6.1), it is proposed that the design will comply with the 'no-dig' principles of the Arboricultural Advisory Information Services (AAIS) Practice Note 12 "*Through the Trees to Development*" - the only difference being that instead of a geo-grid, a geo-textile base is provided, and the no-fines road stone is incorporated in and retained by a geo-web cellular confinement system. Given the individual requirements of each site, it is essential that a specialist engineer is consulted to specify the construction detail. Where it is necessary to remove any existing hard surface, or lower the ground level within the RPA, this may expose roots. This operation must be undertaken using hand tools or an air spade. Any roots found should be treated with the greatest care and surrounded by sharp sand to provide a level base. Please note that 'no-dig' surfaces are not always considered acceptable for adoption.

5.8.2 Where it is shown that the construction of a boundary wall or dwelling encroaches within the RPA of a retained tree, the foundations of the wall or dwelling will be designed in such a manner to minimise the detrimental effect of the construction on the tree's roots. In these situations, any excavations within the RPA of an affected tree will only be undertaken following exploration of the existing root system with an air spade (or by hand digging if soil conditions preclude) and the necessary root pruning undertaken to allow excavation without unnecessary pulling and tearing of the roots to be retained.

This will ensure minimal damage to tree roots where pad and beam or cantilever foundations are considered appropriate. Should a piling rig be required to create piles, any access facilitation pruning or felling necessary to allow access must be undertaken before the commencement of works and only with prior consent of the Local Planning Authority.

5.8.3 If boundary fencing is to be erected within the RPA of retained trees, it is proposed that the fence posts will be secured using “Met-Posts” or similar design to keep the disturbance and damage of the roots of the trees to a minimum.

5.9 Reporting and Monitoring Procedures

5.9.1 In accordance with item 6.3 of BS 5837:2012, the site and associated development should be monitored regularly by a competent Arboriculturalist to ensure that the arboricultural aspects of the planning permission (e.g. the installation and maintenance of protective measures and the supervision of specialist working techniques) are implemented. Furthermore, regular contact between the Site Manager and the Arboriculturalist allows them to effectively deal with and advise on any tree related problems that may occur during the development process. This system should be auditable. Should any issues arise during the arboricultural monitoring of the development the Arboriculturalist will contact the LPA and appropriate action taken only with the prior permission of Ms Suman Sandhu and the LPA.

6.0 Recommendations

6.1 It is recommended that the measures outlined in this report are implemented in full to provide retained trees with the highest level of protection during the process of demolition and construction.

6.2 Subject to achieving Planning Permission, it is recommended that a detailed Arboricultural Method Statement & Tree Protection Plan should be provided. This will include the following: fencing type, ground protection measures, “no dig” surfacing, specialised foundations, access facilitation pruning specification, project phasing and an extensive auditable monitoring schedule.

6.3 Tree surgery should be completed as detailed in the Schedule of Trees. Where this has been identified for reasons other than to permit development, this work should be completed within the advised timescales irrespective of any development proposals.

6.4 The tree surgery works proposed as part of this survey are recommended to mitigate any identified problems that may be caused by trees near the proposed development. To this end, should these recommendations be overruled, this survey stands as the opinion of Hayden’s Arboricultural Consultants Limited, and therefore any damage or injury caused by trees recommended by this practice for felling or tree surgery works, to which the proposed schedule of works has been altered or the tree has been requested to be retained by the LPA, cannot be the responsibility of this practice.

7.0 Limitations & Qualifications

Tree inspection reports are subject to the following limitations and qualifications.

General exclusions

Unless specifically mentioned, the report will only be concerned with above ground inspections. No below ground inspections will be carried out without the prior confirmation from the client that such works should be undertaken.

The validity, accuracy and findings of this report will be directly related to the accuracy of the information made available prior to and during the inspection process. No checking of independent third-party data will be undertaken. Hayden's Arboricultural Consultants Limited will not be responsible for the recommendations within this report where essential data are not made available or are inaccurate.

This report will remain valid for one year from the date of inspection subject to the recommendations specified within being adhered to. It must also be appreciated that recommendations proposed within this report may be superseded by extreme weather, or any other unreasonably foreseeable events.

However, if any additional alterations to the property or soil levels are carried out and/or further tree works undertaken other than specified within the report, it will become invalid and a new tree inspection strongly recommended.

It will be appreciated, and deemed to be accepted by the client and their insurers, that the formulation of the recommendations for the management of trees will be guided by the following: -

1. The need to avoid reasonably foreseeable damage.
2. The arboricultural considerations - tree safety, good arboricultural practice (tree work) and aesthetics.

The client and their insurers are deemed to have accepted the limitation placed on the recommendations by the sources quoted in the attached report. Where sources are limited by time constraints or the client, this may lead to an incomplete quantification of the risk.

Signed:

December 2022
For and on Behalf of Hayden's Arboricultural Consultants Limited

8.0 References

British Standards Institute. (2010). *Recommendations for Tree Work BS 3998:2010* BSI, London.

British Standards Institute. (2012). *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* BSI, London.

Ministry of Housing, Communities & Local Government. (2014). *Tree Preservation Orders and trees in conservation areas.* London: Ministry of Housing, Communities & Local Government.

Mattheck & Breloer, H. (1994). *Research for Amenity Trees No.4: The Body Language of Trees*, HMSO, London.

NHBC Standards (2007) *Chapter 4.2 'Building Near Trees'.* National House-Building Council.

NJUG 4 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Issued 16 November 2007.

Lonsdale, D. (1999). *Research for Amenity Trees No 7: Principles of Tree Hazard Assessment and Management*, HMSO, London.

Schwaze, F.W.M.R. Engels, J. & Mattheck, C. (2000) *Fungal Strategies of Wood Decay in Trees*. Springer.

Strouts, R.G. & Winter, T.G. (1994). *Research for Amenity Trees No.2: Diagnosis of Ill-Health in Trees*. Department of the Environment, HMSO, London.

Weber, K., Mattheck, C. (2003). *Manual of Wood Decays*. The Arboricultural Association.

9.0 Appendices

Appendix	**A**	Species List & Tree Problems
Appendix	**B**	Schedule of Trees
Appendix	**C**	Preliminary Schedule of Works to Allow Development
Appendix	**D**	Explanatory Notes
Appendix	**E**	Tree Preservation Order Enquiry/Response
Appendix	**F**	Advisory Information & Sample Specifications

1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care
2. European Protected Species and Woodland Operations Checklist (v.4)
3. BS 5837:2012 Figure 2 - Default specification for protective barrier
4. BS 5837:2012 Figure 3 - Examples of above-ground stabilising systems

Appendix	**G**	Drawing no. 9993-D-AIA

Appendix A - Species List & Tree Problems

Species List:

Apple	*Malus sp*
Bay Laurel	*Laurus sp*
Beech	*Fagus sp*
Birch	*Betula sp*
Blue Atlas Cedar	*Cedrus sp*
Box	*Buxus sp*
Cypress	*Cupressus sp*
Elder	*Sambucus sp*
Hawthorn	*Crataegus sp*
Hazel	*Corylus sp*
Holly	*Ilex sp*
Hornbeam	*Carpinus sp*
Oak	*Quercus sp*
Purple Plum	*Prunus sp*
Tamarisk	*Tamarix sp*

Tree Problems:

This gives a brief description of the problems identified in the attached Tree Survey.

Name: Deadwood	
Symptoms/damage type and cause:	This relates to dead branches in the crown of the tree. In the majority of cases, this is caused by the natural ageing process of the tree or shading due to its close proximity to neighbouring trees. However, in some situations, it may be related to fungal, bacterial or viral infection.
Consequence:	Depending upon the location and mass of dead wood removal of the affected tissue may be necessary to prevent harm to persons or property as the wood will become unstable as it decays and in some circumstances is likely to fall from the tree with little or no warning.
Control:	Detailed monitoring should be undertaken on those trees showing signs of excessive deadwood production to identify the underlying cause.
Species affected:	Most tree species.
Images:	 

Appendix B

Schedule of Trees

SCHEDULE OF TREES (AIA) 37 St Martins Approach, Ruislip,

Surveyed By: Nick Hayden Date: 22/11/2021
Managed By: Nick Hayden

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m^2)	Aspect	Aspect	SULE	Ground Cover						
A001	Apple, Birch, Box Elder, Hazel, Purple Leaved Cherry Plum,	200	5		Low	N2.5, E2.5, S2.5, W2.5	Area of mixed species, semi-mature trees. As individuals, trees of little merit.	C2		4	Fell section shown on drawing no. 9993-D-AIA to facilitate construction of the replacement garden room.	0
		2.4	0-2m		SM	Moderate						
Yes		18.1			10+ years	Grass						
H001	Bay Laurel	100	2.5		Low	N0.8, E0.8, S0.8, W0.8	Well maintained boundary hedge.	C2		4		
		1.2	0-2m		SM	Moderate						
Yes		4.5			10+ years	Grass						
H002	Bay Laurel, Cypress	150	2.5		Low	N0.8, E0.8, S0.8, W0.8	Well maintained boundary hedge.	C2		4	Fell section shown on drawing no. 9993-D-AIA to facilitate construction of the replacement garden room.	0
		1.8	0-2m		SM	High						
Yes		10.2			10+ years	Bare earth, Grass						
H003	Beech, Cypress, Hawthorn, Hazel, Holly	150	4		Low	N1, E1, S1, W1	Located part on / offsite. Partially maintained hedge.	C2		4	Tip back on northern aspect as shown on drawing no. 9993-D-AIA to permit construction of the replacement garden room.	0
		1.8	0-2m		SM	High						
Yes		10.2			10+ years	Bare earth, Grass						
H004	Cypress	100	2		Moderate	N0.5, E0.5, S0.5, W0.5	Well maintained hedge.	C2		4		
		1.2	0-2m		SM	High						
Yes		4.5			10+ years	Bare earth						
H005	Bay Laurel	150	1.5		Moderate	N0.5, E0.5, S0.5, W0.5	Well maintained hedge.	C2		4		
		1.8	0-2m		SM	High						
Yes		10.2			10+ years	Bare earth						
T001	Cypress	350	10		Moderate	N3, E3, S3, W3	Located in neighbouring rear garden. Restricted access impeded a detailed inspection. All dimensions estimated. Reasonable vigour.	C2		4		
		4.2	0-2m		EM	High						
No		55.4			10+ years	Grass						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
On site		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
T002	Cypress	330	9.5		Moderate	N2.5, E2.5, S2.5, W2.5	Located in neighbouring rear garden. Restricted access impeded a detailed inspection. Twin-stemmed. All dimensions estimated. Reasonable vigour.	C2		4		
		3.96	0-2m		EM	High						
No		49.3			10+ years	Grass						
T003	Oak	970	23		Moderate	N10.5, E11.5, S10, W10	Exposed buttress roots. Good wound wood / occlusion evident at old pruning wounds. Branch wounds and decay on southern aspect of second lowest primary branch extending east. Historic evidence of reduction. Moderate deadwood. Reasonable vigour. Squirrel Drey.	A2		3		
		11.64	4.1-6m		M	High						
Yes		425.7			40+ years	Gravel						
T004	Birch	240	11		Moderate	N2.5, E2.5, S3, W3	Historically topped at circa. 4.5m above ground level. Reasonable vigour.	C2		4	Fell to facilitate construction of the replacement garden room.	0
		2.88	2.1-4m		EM	Low						
Yes		26.1			10+ years	Bare earth						
T005	Cypress	220	9.5		Moderate	N2, E1.5, S2, W2	Twin-stemmed from circa. 1m above ground level. Bark inclusion at fork but union currently appears stable. Tight forks throughout crown.	C2		4		
		2.64	0-2m		SM	High						
Yes		21.9			10+ years	Bare earth, Shrub bed						
T008	Blue Atlas Cedar	920	16		High	N8, E7.5, S9.5, W8	Boundary wall cracked to east of stem. Damage most likely attributable to the tree's roots. Small stem wounds. Evidence of minor crown reduction, very sympathetic and natural tracery retained. Service wires run through crown. Reasonable vigour.	A1		2		
		11.04	2.1-4m		M	Moderate						
Yes		382.9			40+ years	Bare earth, Shrub bed, Gravel						
T011	Cypress	400	11		Moderate	N3, E3, S3, W3	Located off-site. Restricted access impeded a detailed inspection. Reasonable vigour.	C2		4		
		4.8	0-2m		EM	High						
No		72.4			10+ years	Bare earth, Tarmac						

Appendix C

Schedule of Works to Allow Development

SCHEDULE OF WORKS (AIA)

37 St Martins Approach, Ruislip,

Surveyed By: Nick Hayden
Surveyed: 22/11/2021
Managed By: Nick Hayden

Tree No.	Species	Work required	Priority
A001	Apple, Birch, Box Elder, Hazel, Purple Leaved Cherry Plum,	Fell section shown on drawing no. 9993-D-AIA to facilitate construction of the replacement garden room.	**0**
H002	Bay Laurel, Cypress	Fell section shown on drawing no. 9993-D-AIA to facilitate construction of the replacement garden room.	**0**
H003	Beech, Cypress, Hawthorn, Hazel, Holly	Tip back on northern aspect as shown on drawing no. 9993-D-AIA to permit construction of the replacement garden room.	**0**
T004	Birch	Fell to facilitate construction of the replacement garden room.	**0**

Appendix D

Explanatory Notes

Explanatory Notes

HAYDEN'S Arboricultural Consultants

Categories

Below is an explanation of the categories used in the attached Tree Survey.

No Identifies the tree on the drawing.

Species Common names are given to aid understanding for the wider audience.

BS 5837 Main Category Using this assessment (BS 5837:2012, Table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing:

Category A - Those of high quality with an estimated remaining life expectancy of at least 40 years;

Category B - Those of moderate quality with an estimated remaining life expectancy of at least 20 years;

Category C - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

Category U - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

BS 5837 Sub Category Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:

Sub Category 1 - Mainly arboricultural qualities;

Sub Category 2 - Mainly landscape qualities;

Sub Category 3 - Mainly cultural values, including conservation .

Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.

DBH (mm) Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

Age Recorded as one of seven categories:

Y Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.

S/M Semi-mature. An established tree, but one which has not reached its prospective ultimate height.

E/M Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.

M Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.

O/M Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.

D Dead.

Height	Recorded in metres, measured from the base of the tree.
Crown Base	Recorded in metres, the distance from ground and aspect of the lowest branch material.
Lowest Branch	Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.
Life Expectancy	Relates to the prospective life expectancy of the tree and is given as 4 categories: 1 = 40 years+; 2 = 20 years+; 3 = 10 years+; 4 = less than 10 years.
Crown Spread	Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.
Minimum Distance	This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).
RPA	This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority". The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority's tree officer.
Water Demand	This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 "Building Near Trees".
Visual Amenity	Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows: Low — An inconsequential landscape feature. Moderate — Of some note within the immediate vicinity, but not significant in the wider context. High — Item of high visual importance.
Problems/ Comments	May include general comments about growth characteristic, how it is affected by other trees and any previous surgery work; also, specific problems such as deadwood, pests, diseases, broken limbs, etc.
Work Required (TS)	Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the "Problems/comments" category.

Work Required (AIA)	Identifies the tree work specifically necessary to allow a proposed development to proceed.
Priority	This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey. **1** Urgent – works required immediately; **2** Works required within 6 months; **3** Works required within 1 year; **4** Re-inspect in 12 months, **0** Remedial works as part of implementation of planning consent.

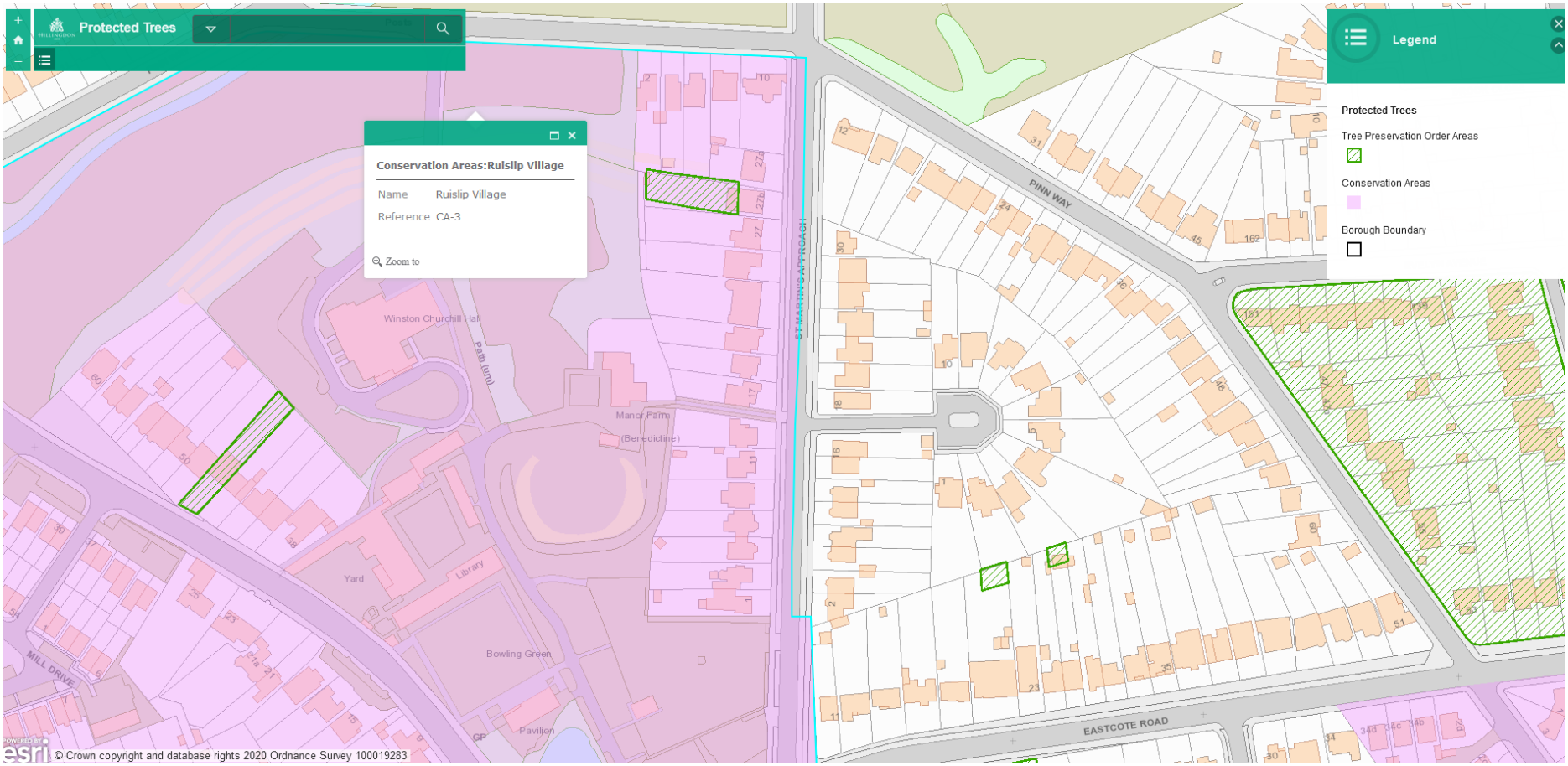
BS 5837:2012 Terms and Definitions

Access Facilitation Pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculturist	Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Competent Person	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. *NOTE - a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.*
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	Area based on the root protection area from which access is prohibited for the duration of a project.
Root Protection Area (RPA)	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Service	Any above or below ground structure or apparatus required for utility provision. **NOTE** - examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
Stem	Principal above ground structural component(s) of a tree that supports its branches.
Structure	Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Tree Protection Plan	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Veteran Tree	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. **NOTE** - these characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem.

Appendix E

Tree Preservation Order Response/Enquiry


SHERWOOD AVENUE
PARK AVENUE
Path (um)
Path (um)
Legend
Protected Trees
Tree Preservation Order Areas
Conservation Areas
Borough Boundary
Tree Preservation Order Areas:
Reference TPO 459
Address 1-5,6-16 Sherwood Ave & 33,37,45-49 St.Martins App
Date 30/01/1990
Zoom to


Protected Trees
Conservation Areas:Ruislip Village
Name Ruislip Village
Reference CA-3
Zoom to
Legend
Protected Trees
Tree Preservation Order Areas
Conservation Areas
Borough Boundary
PINN WAY
ST MARTINS APPROACH
EASTCOTE ROAD
MILL DRIVE
Winston Churchill Hall
Manor Farm
(Benedictine)
Yard
Library
Bowling Green
Pavilion
GP
Path (um)
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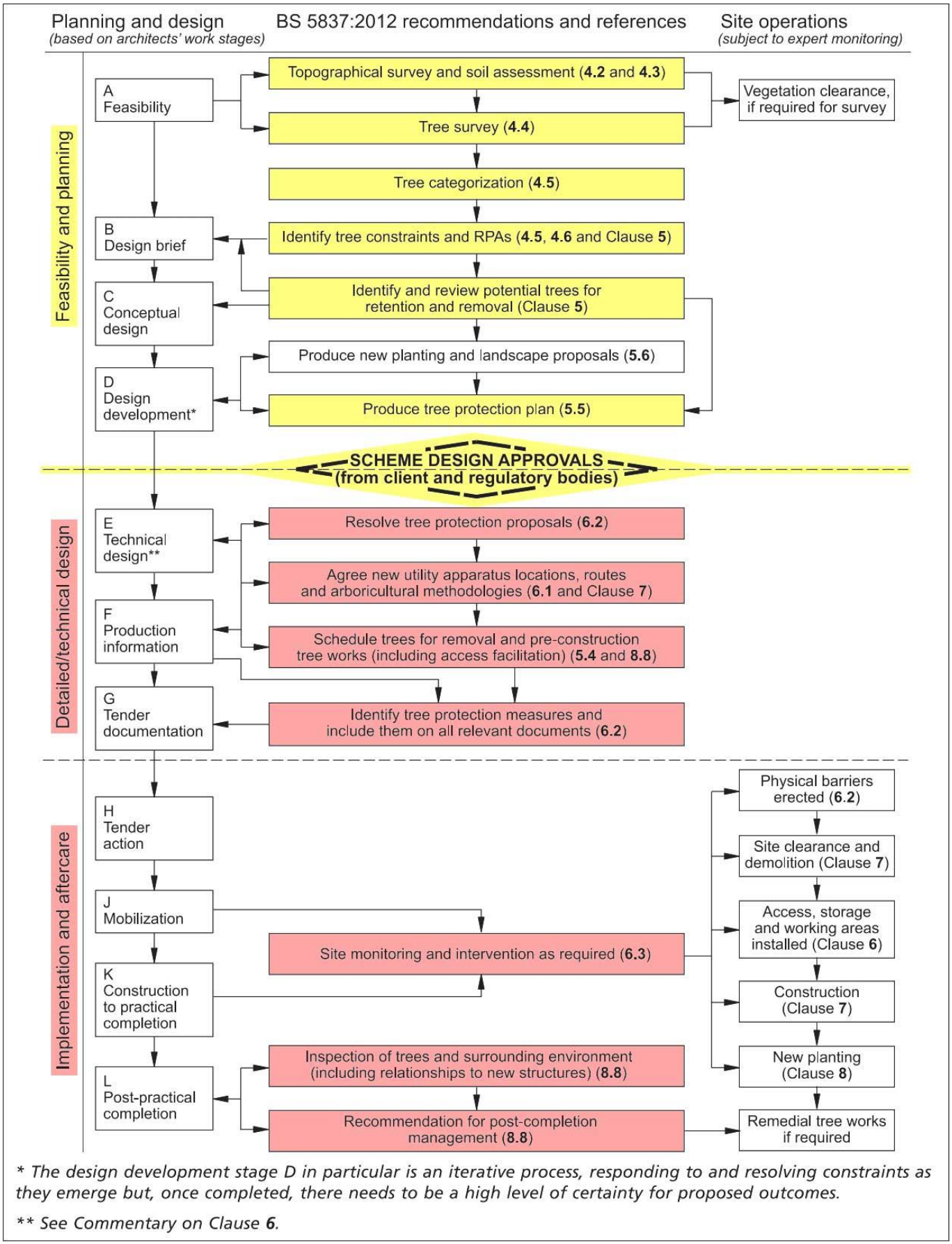
Appendix F

Advisory Information & Sample Specifications

1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

*** See Commentary on Clause **6**.*

2.

European Protected Species and woodland operations. (V4)

Complete all sections of the Checklist

✔

Checklist

1 **Are you within, or close to, the known mapped range of any of the protected species OTHER THAN BATS which are potentially everywhere? Tick any that apply.**
See distribution maps in the Good Practice Guidance for each species -

- ☐ Dormice
- ☐ Otters
- ☐ Great crested newts
- ☐ Sand lizards
- ☐ Smooth snakes

YES / NO

2 **Does your wood contain any of the following habitats? Tick any that apply.**

- ☐ Old trees with holes and crevices which might be used bats
- ☐ Species rich scrub/coppice, early growth stage plantations and forest interfaces
- ☐ Rivers on which otters might be found
- ☐ Ponds which might be occupied by great crested newts
- ☐ Open areas on heathy soils

YES / NO

3 **Have any of the protected species been recorded in this wood or on adjoining sites? Tick any that apply.**
Indicate which sources of information you have checked:

- ☐ National Biodiversity Network (www.nbn.org.uk)
- ☐ Local Biological Records Centre
- ☐ Local Wildlife Trust
- ☐ Other

Specify Other:

YES / NO

4 **Have your inspections or any expert surveys found any of the following signs or evidence? Tick any that apply.**

- ☐ Signs (e.g. otter spraint, nuts gnawed by dormice, leaves folded by newts)
- ☐ Sightings (or echo-location)
- ☐ Potential breeding or roosting sites (e.g. veteran trees, old trees with crevices, riverside hollow trees, ponds, timber stacks, large fallen deadwood)
- ☐ Confirmed breeding or roosting sites (i.e. evidence of sites actually being used)

Details:

YES / NO

Details

Name of Wood:

Grid Reference:

Area: (ha) .

Date of Assessment:

Name of Assessor:

CHECK POINT

If you have answered NO to ALL of the above then only bats need to be considered in your operations.

If you have answered YES to any of the above then the species concerned must be considered as well as bats.

Notes

5 **Do the operations comply with Good Practice for bats and any other species found (or likely to be found in your wood) or can the operations be modified to do so?**
Details: Use reverse of form to expand as required:

YES — A licence is not required but continue to sections 6 and 7 below

NO — You will need to obtain a licence BEFORE carrying out the work (see EPS Licence Application Forms and Notes)

6 **Whether or not a licence is required...**
Has the information been communicated to operators (including the location of breeding sites and sensitive areas)? Tick any that apply.

- ☐ Included in documentation (e.g. contract, letter of instruction, site assessment or other management plan)
- ☐ Shown to operators and/or their supervisor
- ☐ Marked with paint or hazard tape
- ☐ Shown on the site plan

Other means:

YES

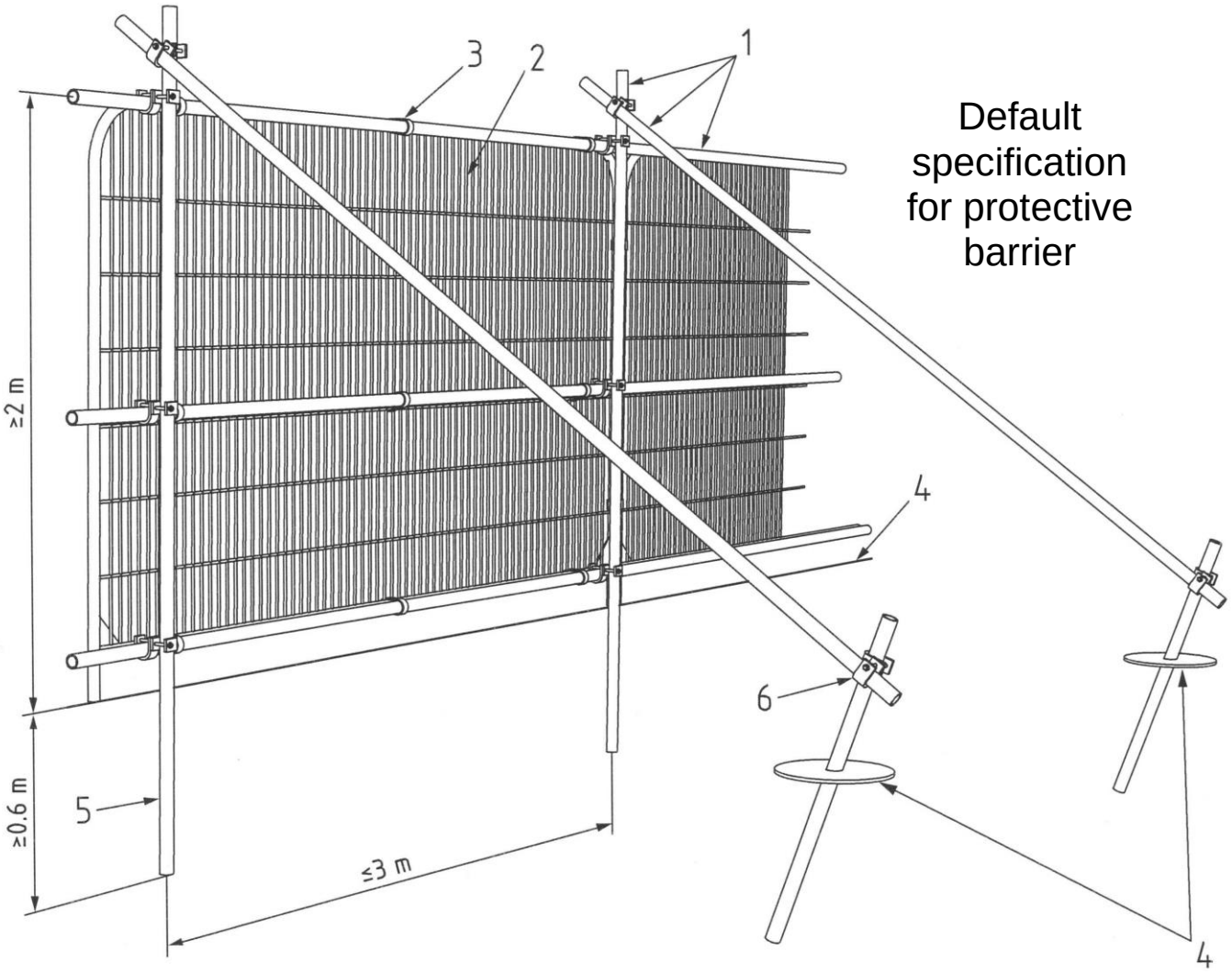
NO — You may commit an offence if you do not tell your operators about the protected species in your wood.

7 **Have arrangements for supervision been made to ensure Good Practice guidance is complied with during the operations?**
Details:

YES

NO — You may commit an offence if you do not take steps to ensure that your operators comply with the Good Practice guidance.

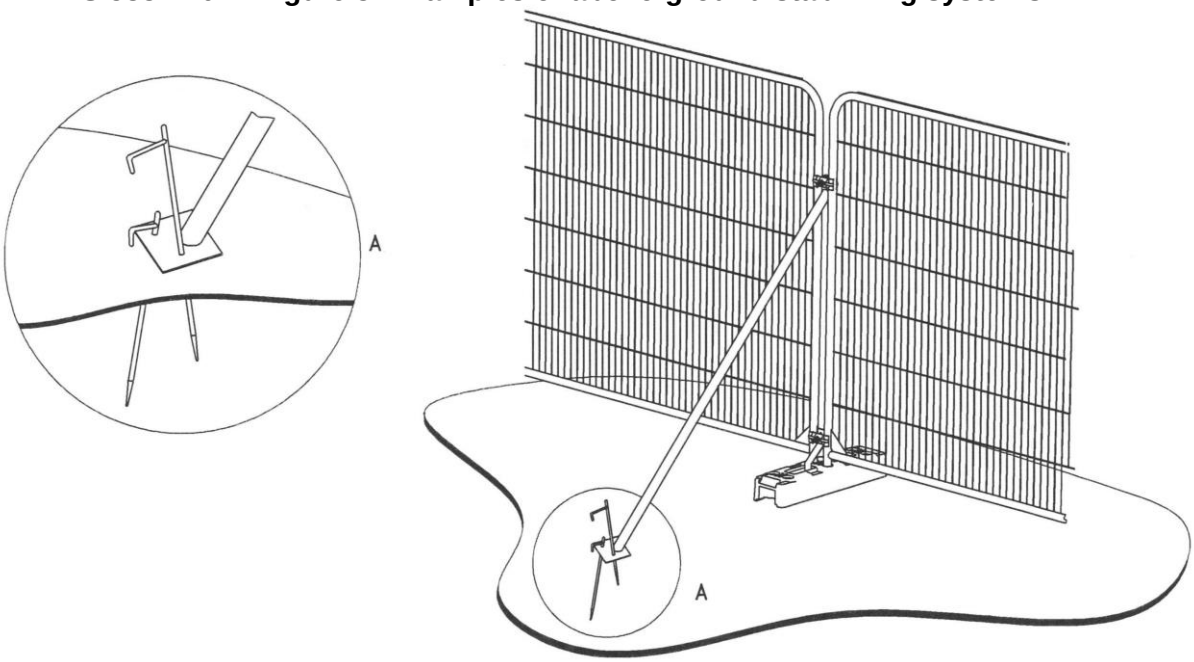
3. BS 5837:2012 Figure 2: Default specification for protective barrier



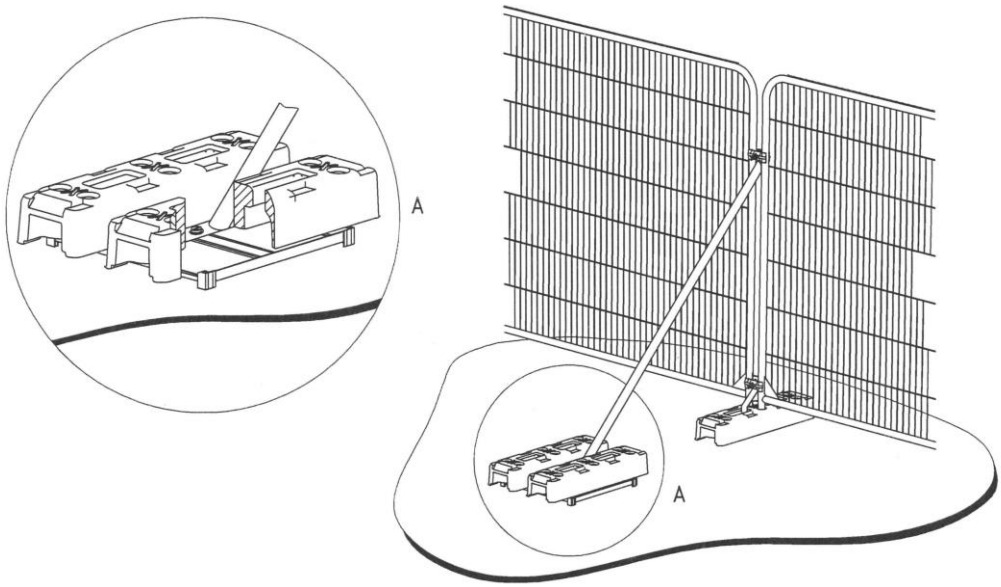
Key

1	Standard scaffold pole
2	Heavy gauge 2m tall galvanised tube and welded mesh infill panels
3	Panels secured to uprights and cross-members with wire ties
4	Ground level
5	Uprights driven into the ground until secure (minimum depth 0.6m
6	Standard scaffold clamps

4. BS 5837:2012 Figure 3: Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix G

Haydens Drawing

- Arboricultural Impact Assessments
- Arboricultural Method Statements
- Tree Constraints Plans
- Arboricultural Feasibility Studies
- Shade Analysis
- Picus Tomography
- Arboricultural Consultancy for Local Planning Authority
- Quantified Tree Risk Assessment
- Health & Safety Audits for Tree Stocks
- Tree Stock Survey and Management
- Mortgage and Insurance Reports
- Subsidence Reports
- Woodland Management Plans
- Project Management
- Ecological Surveys